

REMARKS

When last examined, the present application included Claims 1, 4-7, 13, 16-22, 24-33 and 42. In the open Office Action, the Examiner objected to Claims 26-33 and rejected the remaining pending claims on various grounds. In this amendment, Applicants have amended Claims 1, 4, 13, 19 and 42. The remaining claims remain at issue and have not been amended. Applicants appreciate the Examiner's indication of allowability of Claims 26-33; however, for the reasons pointed out below, the base independent claim is allowable and accordingly Applicants have not amended the claims as suggested by the Examiner. In light of the arguments set forth below, Applicants respectfully submit that all of the claims are in a condition for allowance and urgently request that a notice of allowance be issued.

I. Response to Rejection of Claims 19-22 and 24-32 Under 35 U.S.C. § 112

The Examiner has rejected Claim 19 and those claims dependent therefrom on the grounds that there is insufficient antecedent basis in the claim for the limitation "the data wire". Claim 19 has been amended to recite at the location noted by the Examiner "the data line". With this change, the rejection is overcome and Applicants request that the rejection be withdrawn.

II. Response to Rejection of Claims 1, 4-7 and 42

A. Claims 1 and 4-7

These Claims stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaneko et al. (US 6,433,842) in view of Fogarty et al. (US 4,181,564). The Examiner has opined that Kaneko Fig. 1 discloses a number of the limitations of the invention of Applicants in Claim 1, and has relied on Fogarty to fill in the missing features. Applicants respectfully disagree with the Examiner's application of Kaneko. Claim 1 has been amended to more

clearly recite the Applicants' invention and in particular lines 6 and 7 have been amended to recite "forming a contact hole extending through the insulating layer and exposing the aluminum or aluminum alloy material of the first conductive layer; and in lines 8 and 9 text has been amended to read "forming a second conductive layer formed of indium zinc oxide (IZO) and directly contacting the aluminum or aluminum alloy material of the first conductive layer through the contact hole".

Referring to Kaneko in Fig. 1, it will be appreciated that the structure illustrated does not disclose or suggest that the second conductive layer directly contacts an aluminum-based material of the first conductive layer. Particularly referring to Fig.1, the second conductive layer 111 contacts directly layer 9 which is described in the specification of Kaneko at column 7 line 56 as being composed of molybdenum and zirconium. Accordingly, the feature of Applicants' invention according to Claim 1 of "forming a second conductive layer formed of indium zinc oxide (IZO) and directly contacting the aluminum or aluminum alloy material of first conductive layer through the contact hole" is not disclosed. Additionally, the specification of Kaneko, particularly in column 1 beginning at line 31, points out that the aluminum alloy exhibits high contact resistance against an indium-containing oxide used as the material of pixel electrodes, such as indium tin oxide (ITO) and indium zinc oxide (IZO) and is therefore impractical to attempt direct electrical connection therebetween. Thus, Kaneko is teaching away from Applicants' invention according to Claim 1.

In light of the foregoing, Applicants respectfully request that rejection of Claim 1 be withdrawn. Claims 4 through 7 depend either directly or indirectly on Claim 1 and accordingly are allowable at least for a reason of dependency. Applicants accordingly request that the rejection of Claims 1 and 4 through 7 be withdrawn.

B. Claim 42

Claim 42 stands rejected Kaneko coupled with Fogarty, and the Examiner has applied reasoning similar to that described above with regard to Claims 1 and 4-7. Claim 42 has been amended to recite “forming a contact hole extending through the silicon nitride layer and exposing the aluminum signal line; and forming a second conductive layer formed of indium zinc oxide (IZO) in directly contacting the aluminum signal line through the contact hole”. As pointed out above, Kaneko does not disclose the structure of an indium zinc oxide layer directly contacting an aluminum containing material. Accordingly, the rejection of Claim 42 is not well grounded and Applicants request that the rejection be withdrawn and the claim allowed.

III. Response to Rejection of Claims 13 and 18-22

A. Claims 13 and 18

The Examiner has rejected that Claim 13 under 35 U.S.C. § 103(a) “as being unpatentable over Song et al. (US 6,163,356) in view of Kaneko and Fogarty.” In applying Song, the Examiner refers to Figs. 4a - 4f. Under the rejection, the Examiner applies various aspects of the structure shown in Figs. 4a through 4f of Song as allegedly showing certain of the elements set forth in the Applicants’ invention according to Claim 13. However, Applicants’ invention according to Claim 13 as amended is not disclosed by, nor made obvious in light of the cited art. A number of the actions recited in Applicants’ invention according to Claim 13 are not disclosed or suggested in Song et al. More particularly, in Applicants’ invention according to Claim 13 it is recited “forming a contact hole extending through the insulating layer and exposing the aluminum or aluminum alloy material of the gate pad”. In the rejection, the Examiner is referring to in this aspect Fig. 4e where in contact

hole 59 is opened to expose a portion of gate pad 15. However, carefully reviewing the specification of Song et al., it is noted by Applicants that gate pad 15 includes an aluminum layer 15a which is covered by a layer of material which in the specification is described as being one of chromium, molybdenum, tantalum or antimony. Accordingly, when contact hole 59 is opened as illustrated in Fig. 4e, only the cover layer of chromium, molybdenum, tantalum, or antimony is exposed. As pointed out above, the forming of a contact hole in accordance with Applicants' invention exposes "the aluminum or aluminum alloy material of the gate pad". Thus the Song reference does not disclose this action. Similarly, Song also does not disclose or suggest "patterning the third conductive layer to form a conductive pattern directly contacting the aluminum or aluminum alloy material of the gate pad in the contact hole". Song, much like Kaneko, teaches that a protective conductive layer should be placed over an aluminum containing layer so that any contact to, in the case of Song, the gate pad would be made not directly to the aluminum-based material, but rather to the protective conductive cover layer. Accordingly, Song, like Kaneko, teaches away from Applicants' invention according to Claim 13 and therefore Applicants respectfully request that the rejection of Claim 13 be withdrawn.

Claim 18 depends on Claim 13 and accordingly is allowable for at least the reason of dependency. In view of the above, Applicants request that Claims 13 and 18 be allowed.

B. Claims 19, and 20-22

Claim 19 is rejected under Song, the Examiner referring to again Figs. 4a through 4f. As will be pointed out below with particularity, Applicants' invention according to Claim 19 as amended is not disclosed or made obvious by Song combined with the other cited art. In particular, the Examiner states that Song discloses "forming a contact hole 59 extending

through the passivation layer 37 and the silicon nitride layer 17 and exposing gate pad 15". In Applicants' invention according to Claim 19, the method includes "a forming a contact hole extending through the passivation layer and the gate insulation layer and exposing the aluminum or aluminum alloy material of the gate pad". As pointed out above with regard to the rejection on Kaneko, Song does not disclose "forming a contact hole . . . and exposing the aluminum or aluminum alloy material of the gate pad". In Song, the formation of the opening leaves exposed the cover material and not an aluminum or aluminum alloy material of the gate pad. Accordingly, Applicants' action is not disclosed by Song.

Also, Song does not disclose or suggest "patterning the third conductive layer to form a redundant gate pad directly contacting the aluminum or aluminum alloy material of the gate pad through the contact hole". As will be appreciated by reference to Fig. 4f in Song, the electrical connection of the third conductive layer to the gate pad is not to aluminum or aluminum alloy material but rather to the cover material. Accordingly, this action in the process of Claim 19 is not disclosed or suggested by Song. Applicants respectfully request that the rejection of Claim 19 be withdrawn.

Claims 20-22 depend directly from Claim 19 and accordingly are allowable for at least the reasons of allowability of claim 19 as pointed out above. Accordingly, Applicants request that the rejection of Claims 20-22 be withdrawn.

IV. Response to Rejection of Claims 16-17 and 24-25

In the rejection of the above claims, the Examiner relies on Song, Fogarty, Kaneko and Arai et al. The foregoing rejected claims are allowable for at least the reason of dependency on allowable Claim 13 with respect to Claims 16 and 17, and allowable Claim 19

with regard to dependent Claims 24 and 25. Accordingly, Applicants respectfully request that the rejection be withdrawn and the claims allowed.

V. New Claims

Applicants have added new Claims 43-48 to round out the scope of their invention. These claims are allowable for at least the reason of dependency on allowable claims.


CONCLUSION

In light of the foregoing, all of the claims currently pending in the application are ready for allowance and Applicants respectfully request that the rejections be withdrawn and the claims allowed and the case passed to issue. Should the Examiner have any questions or concerns or care to discuss the application, he is requested to contact the undersigned at (408) 392-9250.

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Respectfully submitted,



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